

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for delivering multimedia data from a transmitter to each of a plurality of receivers through a network, comprising the steps of:

at the transmitter,

a) delivering real-time multimedia data in multicast to the receivers while storing the real-time multimedia data into a first memory;

b) when having received a time-shift transition command from a receiver, reading time-shifted multimedia data from the first memory depending on the time-shift transition command;

c) transmitting the time-shifted multimedia data in unicast to the receiver which originated the time-shift transition command;

at the receiver,

d) receiving the real time multimedia data in multicast from the transmitter before transmitting the time-shift transition command; [[and]]

e) receiving the time shifted multimedia data in unicast from the transmitter after transmitting the time-shift transition command[.]; and

f) transitioning from time shifted multimedia data to real time multimedia data when the difference between a time-shifted time stamp and a real-time time stamp is smaller than a predetermined threshold.

2. (Original) The method according to claim 1, wherein the step a) comprises:
adding a time stamp to each transmission block size of the real-time multimedia data;
storing the real-time multimedia data with time stamps into the first memory; and
delivering the real-time multimedia data with time stamps to the receivers.

3. (Original) The method according to claim 2, further comprising the steps of:

at each of the receivers,

creating a thumbnail picture from the real-time multimedia data received from the transmitter each time an amount of real-time multimedia data per unit time exceeds a predetermined level; and

storing thumbnail pictures with corresponding time stamps into a second memory so as to designate a desired thumbnail picture, allowing a desired location of the real-time multimedia data to be designated.

4. (Original) The method according to claim 3, further comprising the steps of:
when a time-shift request occurs, creating a time-shift transition command based on the thumbnail pictures with the corresponding time stamps stored in the second memory; and
transmitting the time-shift transition command to the transmitter so as to receive time-shifted multimedia data from the transmitter in unicast.
5. (Original) The method according to claim 1, wherein the time shift transition command is one of a replay start location designation command, a pause command, a reverse command, a slow-replay command, and a fast-forward command.
6. (Original) The method according to claim 1, further comprising the steps of:
at each of the receivers,
storing the real-time multimedia data received from the transmitter into a third memory; and
when a time-shift request occurs, reading time-shifted multimedia data from the third memory depending on the time-shift request.
7. (Original) The method according to claim 1, further comprising the steps of:
at the transmitter,
managing a delivery status including a transmission status, a transmission mode, and time information for each of the receivers.
8. (Currently Amended) A method for delivering multimedia data from a transmitter to each of a plurality of receivers through a network, comprising the steps of:
when having received a start request command from a receiver, the transmitter delivering real-time multimedia data in multicast to the receiver while storing the real-time multimedia data into a first memory;
when having received a time-shift transition command from the receiver, reading time-shifted multimedia data from the first memory depending on the time-shift transition command, to transmit the time-shifted multimedia data in unicast to the receiver which originated the time-shift transition command; [[and]]
when having determined the difference between a time-shifted time stamp and a real-time time stamp is smaller than a predetermined threshold, transitioning from time shifted multimedia data to real time multimedia data; and
when having received a termination request command from the receiver, the transmitter terminating multimedia data delivery to the receiver.

9. (Currently Amended) A system for delivering multimedia data from a transmitter to each of a plurality of receivers through a network, wherein the transmitter comprises:

an input section for inputting real-time multimedia data;

a multicast transmitter for transmitting the real-time multimedia data to each of the receivers;

a first unicast transceiver for receiving a command from a receiver and transmitting a response to the receiver;

a command analyzer for analyzing a command received from the receiver to determine a type of the received command; a first memory for storing the real-time multimedia data; and

a first controller controlling the multicast transmitter, the unicast transceiver and the first memory, such that the real-time multimedia data is delivered in multicast to each of the receivers while storing the real-time multimedia data into the first memory, wherein, when having received a time-shift transition command from a receiver, time-shifted multimedia data is read from the first memory depending on the time-shift transition command and is transmitted in unicast to the receiver which originated the time-shift transition command, and

each of the receivers comprises:

a multicast receiver for receiving the real-time multimedia data from the transmitter;

a second unicast transceiver for transmitting a command to the transmitter and receiving a response to the command from the transmitter;

[[and]] a second controller controlling such that the real-time multimedia data is received in multicast from the transmitter before transmitting the time-shift transition command, and the time-shifted multimedia data is received in unicast from the transmitter after transmitting the time-shift transition command[.]; and

a data reception selector which upon receiving a real-time time stamp and a time-shifted timestamp, determines the difference between the time-shifted time stamp and the real-time time stamp, wherein, if the difference between the time-shifted time stamp and the real-time time stamp is smaller than a predetermined threshold, the second controller performs a transition from time shifted multimedia data to real time multimedia data.

10. (Original) The system according to claim 9, wherein the first controller adds a time stamp to each transmission block size of the real-time multimedia data, stores the real-time multimedia data with time stamps into the first memory, and delivers the real-time multimedia data with time stamps to the receivers.

11. (Original) The system according to claim 10, wherein each of the receivers further comprises a second memory, wherein the second controller creates a thumbnail picture from the real-time multimedia data received from the transmitter each time an amount of real-time multimedia data per unit time exceeds a predetermined level, and stores thumbnail pictures with corresponding time stamps into the second memory so as to designate a desired thumbnail picture, allowing a desired location of the real-time multimedia data to be designated.

12. (Original) The system according to claim 11, wherein when a time-shift request occurs, the second controller creates a time-shift transition command based on the thumbnail pictures with the corresponding time stamps stored in the second memory, and controls the second unicast transceiver to transmit the time-shift transition command to the transmitter so as to receive time-shifted multimedia data from the transmitter.

13. (Original) The system according to claim 9, wherein each of the receivers further comprises a third memory, wherein the second controller stores the real-time multimedia data received from the transmitter into the third memory and, when a time-shift request occurs, reads time-shifted multimedia data from the third memory depending on the time-shift request.

14. (Original) The system according to claim 9, wherein the first controller manages a delivery status including a transmission status, a transmission mode, and time information for each of the receivers.

15. (Cancelled)

16. (Currently Amended) A receiver for receiving multimedia data from a transmitter through a network, comprising:

a multicast receiver for receiving real-time multimedia data from the transmitter;

a unicast transceiver for transmitting a time-shift transition command to the transmitter and receiving a response to the time-shift transition command from the transmitter; [[and]]

a controller controlling such that the real-time multimedia data is received in multicast from the transmitter before transmitting the time-shift transition command, and the time-shifted multimedia data is received in unicast from the transmitter after transmitting the time-shift transition command[[.]]; and

a data reception selector which upon receiving a real-time time stamp and a time-shifted timestamp, determines the difference between the time-shifted time stamp and the real-time time stamp, wherein, if the difference between the time-shifted time stamp and the real-time time stamp is smaller than a predetermined threshold, the second controller performs a transition from time shifted multimedia data to real time multimedia data.

17. (Cancelled)

18. (Currently Amended) A program instructing a computer to receive multimedia data from a transmitter through a network, comprising the steps of:

receiving real-time multimedia data in multicast from the transmitter;

transmitting a time-shift transition command to the transmitter;

[[and]] after receiving a response to the time-shift transition command from the transmitter, receiving time-shifted multimedia data in unicast from the transmitter[[]]; and

transitioning from time shifted multimedia data to real time multimedia data when the difference between a time-shifted time stamp and a real-time time stamp is smaller than a predetermined threshold.